CSCI 1900  
Mathematics for Computer Science

Credit Hours:  3
Contact Hours:  3

Course Coordinator:  Chris Wallace

Text(s):  
Discrete Mathematical Structures, 6th edition, Kolman, Busby, Ross, 2008 (Required)

Catalog Description:

Students gain a working knowledge of set theory, mathematical induction and recursion, relations and digraphs, functions, trees and languages, finite-state machines, and languages and see how these topics are applied to the practice of computer science.

Prerequisite(s): Two years of high school algebra or equivalent

Co-requisite: CSCI 1250

CS: REQUIRED
IS: REQUIRED
IT: REQUIRED

Course Outcomes:

Understand examples and perform operations on sets, functions, relations; - ETSU Outcome 4a; ABET Outcome a

Ability to use propositional and predicate logic, and matrices using the appropriate terminology; - ETSU Outcome 4a; ABET Outcome a

Effectively use formal logic proofs and logical reasoning to solve problems; - ETSU Outcome 4a; ABET Outcome a

Model problems in computer science using graphs and trees; and - ETSU Outcomes 4a, CS-1; ABET Outcome: a, CS-j

Relate and apply these concepts to practical applications of computer science. - ETSU Outcomes 4a, CS-1; ABET Outcomes a, CS-j

Major Topics:

Sets and Subsets/Operations on Sets Sequences/Regular Expressions
Properties of Integers/Matrices
Propositions and Logical Operations Conditional Statements
Methods of Proof/Mathematical Induction
Relations/Properties of Relations
Equivalence Relations/Functions
Complexity of Functions
Trees/Labeled Trees-Huffman Code
Tree Searching/Minimal Spanning Trees
Graphs/Finite State machines
Regular Languages